sults produced by these alkaloids are not entirely dissimilar; for example, it has been found that morphia, as well as thebain, may possess convulsive properties when given to cold-blooded animals. MM. Grasset and Amblard have found an analogous result in the warm-blooded animals; when one or two centigrammes are injected hypodermically, slight transient convulsions are produced before sleep occurs. When larger doses are given, these transient convulsions are succeeded by a generally calm sleep, during which, half an hour or an hour after the injection, isolated contractions occur, which may pass into a form of clonic convulsion, with marked flexion of the body, occurring at each inspiratory movement. These results seem to indicate that the excito-motor effects produced by preparations of opium may not only be due to the convulsive alkaloids, but also to those which are generally regarded as soporific.—*Revue Scientifique*, March 25, 1882.

The Effect of Bleeding on Inflammation.

The effect of local abstraction of blood in relieving local inflammation is one of the ancient doctrines of therapeutics which is still unrefuted and still unexplained. It was formerly held that the result was produced by a perfectly simple *modus operandi*. By the removal of blood from the surface the vessels of the deeper inflamed parts were partly emptied; but it was later recognized that this explanation is incompatible with the known conditions of the circulation. The local removal of blood never produces a lasting effect on the circulation in the part. At the present time it is generally assumed that the effect of local depletion is to remove the inflammatory stasis, although such an effect has never been demonstrated experimentally; and, moreover, the idea of a derivatory action still haunts the theory of the subject, while the effect is sometimes ascribed to the influence of the depletion on the whole mass of blood. The question has been lately subjected to experimental investigation by Genzmer and Nikolas of Halle, and the results obtained have been described by the former in the *Centralblatt für d. Med. Wiss.* In the web of the foot of curarized frogs foci of inflammation were excited by punctiform cauterization, either by nitrate of silver or a red-hot needle, and the process was watched with the microscope. When the well-known phenomena of inflammation made their appearance, the aggregation and exit of the white corpuscles, retardation of the blood-current, and, finally, the formation of stasis, a leech was applied to the leg. As soon as the leech began to suck, a striking change occurred in the inflammatory process in the foot. The blood-current became quickened, and carried on the corpuscles which were adherent to the wall. The stasis passed away, and in a few minutes the inflamed capillaries were cleared, and presented to the end of the experiment a normal and even accelerated circulation. Whether the corpuscles which had already wandered out of the vessels were influenced by the abstraction of blood could not be with certainty determined. In some experiments scarification was employed after the focus of inflammation had been excited. The effect was less conspicuous, since the loss of blood did not occur with the same vehemence as with a leech, although the amount of blood abstracted was nearly the same. The effect of abstraction of blood from the general circulation, by opening an abdominal vein, was still slighter, although the amount of blood taken was considerable. The conclusion drawn from these experiments is that the antiphlogistic action of local abstraction of blood is produced by a purely mechanical agency. A temporary augmentation of the circulation occurs, by which the capillaries are cleared; and the stasis, which is the first step in a local necrosis, is removed. Not only is no local anæmia produced, but there is actually an arterial hyperæmia; there is an increased supply of arterial blood to the focus of inflammation, which, besides its effect on the bloodvessels, may reasonably be supposed to improve the nutrition of the tissues, and so to counteract the tendencies of inflammation. The antiphlogistic action is clearly proportioned both to the amount of blood withdrawn and to the rapidity of its withdrawal, and its action is notably greater if the blood can be withdrawn from the circulation between the region of the inflammation and the right side of the heart.—*Lancet*, April 15, 1882.

MEDICINE.

The Etiology of Tuberculosis.

The discovery originally made by Villemin, that tuberculosis could be transferred by inoculation to the lower animals, though frequently confirmed, has been as often denied; so that even now, in spite of the positive experiments of Cohnheim and Salomonsen, Baumgarten, Tappeiner, and others, the greatest doubt exists as to whether tuberculosis is actually an infective disease or not. The recent experiments of ROBERT KOCH, however, appear to establish beyond doubt, the truth of the infective nature of this morbid process. After abandoning the old methods of examination, which failed to give any satisfactory proof of the presence of bacteria in tubercle, he succeeded in perfecting a method of staining, by means of which he was able invariably to find a characteristic bacillus in all tubercular tissues.

The tissues are prepared in the ordinary method for similar observations, and either spread on a cover slip and then dried and heated, or the sections of the organ are cut after previous hardening in alcohol; the cover glass or section is then immersed for twenty-four hours, when cold, or one hour when heated to 40° C., in a staining fluid of 1 c.c. of a concentrated alcoholic methylin-blue added to 200 c.c. of distilled water, to which, after repeated shaking, 0.2 c.c. of a 10 per cent. solution of potash is added. The cover glasses or sections are then covered with a concentrated aqueous solution of vesuvin, and after about two minutes washed in distilled water. By this means the blue staining of the tissue is transformed into brown while the bacteria retain their bright-blue colouration, in which, with the exception of the lepra bacillus, they differ from all other bacteria.

The bacteria demonstrated by this process are rod-shaped, and, therefore, belong to the group of bacilli. They are very thin, and about one-fourth or one-half as long as the diameter of a red blood-corpuscle, although they may attain a much greater length. They closely resemble the bacteria of leprosy, but are distinguished from them by being somewhat narrower and more pointed at the ends, besides being incapable of being stained by Weigert's process.

These bacteria are found in all localities where the tubercular process is active, and are arranged in heaps, often in the interior of the cells, as occurs with the lepra bacilli, though numerous free bacteria, especially at the borders of such collections, are also found. When the height of the tubercular process has been reached, the bacilli are then found in smaller numbers and in small groups, associated with faintly coloured and scarcely recognizable bacilli, which have probably died or are then passing into an inactive condition. When giant-cells are found in tuberculous tissues, these bacteria are nearly always to be found in their interior, and when the tubercular process is slow, this is the only locality in which